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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,871	01/20/2004	Ling-Yi Liu	IFTP0001USA	1870
27765 7590 12/27/2006 NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			EXAMINER UNELUS, ERNEST	
			ART UNIT	PAPER NUMBER
			2181	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/27/2006	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/707,871		LIU ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Ernest Unelus		2181	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01/20/04.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-95 is/are pending in the application.
- 4a) Of the above claim(s) 54-77 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-53 and 78-95 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

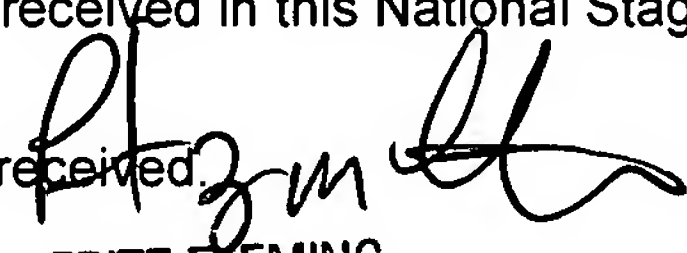
**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
**FRITZ FLEMING**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2100**

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/02/06</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Election/Restrictions**

1. Applicant's election without traverse of invention I, claims 1-53, and 78-95, in the reply filed on November 03, 2006, is acknowledged.
2. The instant application having application No. 10/707,871 has a total of 95 claims. Invention II, claims 54-77 has been withdrawn from consideration and claims 1-53, and 78-95 are now pending in the application; within claims 1-53, and 78-95, there are 4 independent claims and 66 dependent claims, all of which are ready for examination by the examiner.

## **I. INFORMATION CONCERNING OATH/DECLARATION**

### **Oath/Declaration**

1. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

## **II. INFORMATION CONCERNING DRAWINGS**

### **Drawings**

1. The applicant's drawings submitted are acceptable for examination purposes.

## **III. ACKNOWLEDGEMENT OF REFERENCES CITED BY APPLICANT**

1. As required by M.P.E.P. 609(C), the applicant's submissions of the Information Disclosure Statement dated March 02, 2006 is acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending. As required by

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**M.P.E.P 609 C(2)**, a copy of the PTOL-1449 initialed and dated by the examiner is attached to the instant office action.

#### **IV. OBJECTIONS TO THE CLAIM**

1. **Claims 5 and 31** are objected to because of the following informalities: "a detachable canister" is not disclosed in the applicant's specification. The examiner will assume that "a detachable canister" to be physical storage device.
2. As per **claims 47, 48, 84 and 85**, the abbreviations "SES and SAF-TE" are not clearly disclosed in the applicant's specification. Applicant does not state what "SES" or "SAF-TE" stands for.
3. As per **claims 18 and 39**, the abbreviations "ISCSI" is not clearly disclosed in the applicant's specification. Applicant does not state what "ISCSI" stands for.

#### **V. REJECTIONS NOT BASED ON PRIOR ART**

##### **Claim Rejections - 35 USC § 112**

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. **Claims 11 and 25**, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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3. As per **claims 11 and 25**, the limitation "..... interconnect controllers " (line 1) renders this claim as vague and indefinite. Claim 11 is dependent on claim 9, which discloses one controller. Claim 11 can't refer to two controllers if the claim that it depends on discloses only one controller. This makes claim 11 unclear. The same applied to claim 25.

## **VI. REJECTIONS BASED ON PRIOR ART**

### **Double Patenting**

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. **Claims 1-53, and 78-95** is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-62 of copending application No. 11/246,268.

6. Initially, it should be noted that the present application and Application No. 11/246,268, share one common inventor, which is Michael Schnapp. The assignee for both applications is

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Infortrend Technology, Inc. The examiner also notes that neither the instant application nor U.S. application 11/246,268 were the subject of a restriction by the office.

7. Claimed subject matter in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as noted below. *See In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993).*

8. Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See MPEP § 804.

9. Claim 1 is compared to claims 1 of application 11/246,268 in the following table:

Instant Application	Application 11/246,268
<p>A storage virtualization computer system comprising: a host entity for issuing IO requests; an external storage virtualization controller coupled to said host entity for executing IO operations in response to said IO requests;  and at least one physical storage device(PSD), each coupled to the storage virtualization controller through a point-to-point serial-signal interconnect, for providing storage to the storage virtualization computer system through the storage virtualization controller (claim 1)</p>	<p>A patch module comprising: A computer system comprising: a host entity for issuing IO requests; a redundant external storage virtualization controller (SVC) pair for performing IO operations in response to IO requests issued by the host entity comprising a first and a second external SVC coupled to the host entity; and a set of at least one physical storage device (PSD) for providing data storage space to the computer system, with at least one member of said set of at least one PSD comprising a PSD coupled to the said redundant SVC pair through a point-to-point serial signal interconnect for transmission with SAS protocol;</p>



	wherein when one SVC in the said redundant SVC pair is not on line or goes off line after being on line, the alternate SVC in the said redundant SVC pair will automatically take over the functionality originally performed by the said one SVC in the redundant SVC pair (claim 1)
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This is a provisional double patenting rejection since the conflicting claims have not yet been patented. The double patenting rejection is also applicable to other claims in the instant application and application 11/246,268.

10. **Claim 1** is also provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-49 of copending Application No. 11/246,309.

11. Initially, it should be noted that the present application and Application No. 11/246,309, share one common inventor, which is Michael Schnapp. The assignee for both applications is Infortrend Technology, Inc. The examiner also notes that neither the instant application nor U.S. application 11/246,309 were the subject of a restriction by the office.

12. Claimed subject matter in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common

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subject matter, as noted below. *See In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993).*

13. Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See MPEP § 804.

14. Claim 1 is compared to claims 1 of application 11/246,309 in the following table:

Instant Application	Application 11/246,309
A storage virtualization computer system comprising: a host entity for issuing IO requests;  an external storage virtualization controller coupled to said host entity for executing IO operations in response to said IO requests;  and at least one physical storage device(PSD), each coupled to the storage virtualization controller through a <b>point-to-point serial-signal</b> interconnect, for providing storage to the storage virtualization computer system through the storage virtualization controller (claim 1)	A storage virtualization computer system comprising: a host entity for issuing IO requests;  an external storage virtualization controller coupled to said host entity for executing IO operations in response to said IO requests;  and at least one physical storage device (PSD), each coupled to the storage virtualization controller through a <b>SAS</b> interconnect, for providing data storage space to the storage virtualization computer system through the storage virtualization controller (claim 1)

This is a provisional double patenting rejection since the conflicting claims have not yet been patented. The double patenting rejection is also applicable to other claims in the instant application and application 11/246,309.



**Claim Rejections - 35 USC § 102**

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

16. **Claims 1-16, 20-37, 41-46, 50, 78-83, 86-88, and 90-94,** are rejected under 35

U.S.C. 102(e) as being anticipated by Bicknell et al. (US pub. 2003/0193776).

17. As per **claims 1, 21, 78, and 90**, Bicknell discloses “A storage virtualization computer system (**system 100 of fig. 6**) comprising: a host entity for issuing IO requests (**Host computer of fig. 6**); an external storage virtualization controller (**controller 1**) coupled to said host entity for executing IO operations in response to said IO requests (**see fig. 6 and paragraph 0029**); and at least one physical storage device (PSD) (**Disc drive 106.1 of fig. 6**), each coupled to the storage virtualization controller through a point-to-point serial-signal interconnect (**see fig. 6 and paragraph 0019**), for providing storage to the storage virtualization computer system through the storage virtualization controller (**see paragraph 0027**).

18. As per **claims 2, 22, 79, and 91**, Bicknell discloses “The storage virtualization computer system of claim 1” [See rejection to claim 1 above] wherein said point-to-point serial-signal interconnect is a Serial ATA IO device interconnect (**see fig.6 and paragraph 0019**).

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19. As per claims 3, 26, 86, and 92, Bicknell discloses wherein a said at least one PSD comprises a SATA PSD (see paragraph 0019).

20. As per claims 4, 30, 87, and 93, Bicknell discloses wherein a said at least one PSD comprises a PATA PSD and a serial-to-parallel converter (**data interface 144 of fig. 6**) is provided between said device-side IO device interconnect controller and said PATA PSD (see paragraph 0030).

21. As per claims 5 and 31, Bicknell further discloses comprising a detachable canister attached to said storage virtualization controller for containing a said at least one PSD therein (see paragraph 0019, which discloses “Disc drive 106 can preferably be removed without disturbing the operation of subsystem 100”).

22. As per claims 6 and 32, Bicknell discloses wherein a said at least one PSD can be detached from said storage virtualization controller when said storage virtualization controller is on-line (see paragraph 0019, which discloses “Disc drive 106 can preferably be removed without disturbing the operation of subsystem 100”).

23. As per claims 7 and 33, Bicknell discloses wherein a said at least one PSD can be attached to said storage virtualization controller when said storage virtualization controller is on-line (see paragraph 0030).

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24. As per **claims 8 and 28**, Bicknell discloses wherein said storage virtualization controller is configured to define at least one logical media unit consisting of sections of at least one said PSD (paragraph 0007 of the applicant's specification discloses "*A RAID controller combines sections on one or multiple physical direct access storage devices (DASDs), the combination of which is determined by the nature of a particular RAID level, to form logical media units*"; similarly, Bicknell discloses, in fig. 6, a RAID controller combines sections on one or multiple physical direct access storage devices).

25. As per **claims 9 and 23**, Bicknell discloses wherein said storage virtualization controller comprises: a central processing circuitry (**micro-computer 222 of fig. 8**) for performing IO operations in response to said IO requests of said host entity (see **paragraph 0028**); at least one IO device interconnect controller (**controller 1**) coupled to said central processing circuitry (see **fig. 8**); at least one host-side IO device interconnect port (**the host computer connector of fig. 6**) provided in a said at least one IO device interconnect controller for coupling to said host entity (see **paragraph 0017**); and at least one device-side IO device interconnect port (**interface 200 of fig. 8**) provided in a said at least one IO device interconnect controller for coupling to a said at least one physical storage device (see **paragraph 0026**).

26. As per **claims 10 and 24**, Bicknell discloses wherein a said host-side IO device interconnect port and a said device-side IO device interconnect port are provided in the same IO device interconnect controller (see **fig. 6**).

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27. As per **claims 11 and 25**, Bicknell discloses wherein a said host-side IO device interconnect port and a said device-side IO device interconnect port are provided in different IO device interconnect controllers (see fig. 6).

28. As per **claims 12 and 27**, Bicknell discloses wherein said storage virtualization controller comprises a plurality of host-side IO device interconnect ports each for coupling to a host-side IO device interconnect (see fig. 6 and paragraph 0026).

29. As per **claims 13 and 29**, Bicknell discloses wherein said storage virtualization controller is configured to present redundantly a logical media unit on at least two of said plurality of host-side IO device interconnect ports (see paragraph 0019).

30. As per **claims 14 and 35**, Bicknell discloses wherein at least one said host-side IO device interconnect port is Fibre Channel supporting point-to-point connectivity in target mode (see paragraph 0030 and fig. 6).

31. As per **claims 15 and 36**, Bicknell discloses wherein at least one said host-side IO device interconnect port is Fibre Channel supporting private loop connectivity in target mode (see paragraph 0030 and fig. 6).

32. As per **claims 16 and 37**, Bicknell discloses wherein at least one said host-side IO device interconnect port is Fibre Channel supporting public loop connectivity

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in target mode (see paragraph 0032 and fig. 6).

33. As per **claims 20 and 41**, Bicknell discloses wherein at least one said host-side IO device interconnect port is Serial ATA operating in target mode (see paragraph 0019).

34. As per **claim 34**, Bicknell discloses wherein said storage virtualization controller further comprises at least one multiple-device device-side expansion port (**Midplane Card ports 209 of fig. 6**) for accommodating an additional set of at least one PSD.

35. As per **claims 42 and 80**, Bicknell further discloses comprising an enclosure management services mechanism [(MUX 208 of fig. 8), in regards to an “enclosure management service”, the applicant discloses “*In this embodiment, an enclosure management service (EMS) circuitry 360 is attached to the CPC 240 for managing and monitoring at least one of the following devices belonging to the storage virtualization subsystem 20: power supplies, fans, temperature sensors, voltages, uninterruptible power supplies, batteries, LEDs, audible alarms, PSD canister locks, door locks*”. Similarly, Bicknell discloses “The multiplexing electronics selectively opens and closes the first and second data communication paths in response to at least one control signal (such as 218 or 220)”see paragraph 0037. The electronics connection, as discloses, is power supplies].

36. As per **claim 43**, Bicknell discloses wherein said enclosure management services mechanism manages and monitors at least one of the following devices belonging to the storage

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virtualization subsystem: power supplies, fans, temperature sensors, voltages, uninterruptible power supplies, batteries, LEDs, audible alarms, PSD canister locks, door locks (see paragraph 0031).

37. As per **claim 44**, Bicknell discloses wherein said enclosure management services mechanism is configured to support direct-connect EMS configuration (see fig. 8).

38. As per **claim 45**, Bicknell discloses wherein said enclosure management services mechanism is configured to support device-forwarded EMS configuration (see fig. 8).

39. As per **claims 46, 81, 82, and 83**, Bicknell discloses wherein said enclosure management services mechanism is configured to support direct-connect EMS configuration and device-forwarded EMS configuration (see fig. 8).

40. As per **claim 50**, Bicknell discloses wherein said EMS mechanism further comprises status-monitoring circuitry to communicate with said storage virtualization controller (see paragraph 0031).

41. As per **claims 88 and 94**, Bicknell discloses wherein the step of performing said at least one IO operation comprises issuing at least one device-side IO request to said device-side IO device interconnect controller and reformatting said device-side IO request and accompanying IO data into at least one data packet for transmission (see paragraph 0030).



42. **Claims 1, 21, 78, and 90**, are rejected under 35 U.S.C. 102(e) as being anticipated by Johnson et al. (US pub. 2003/0033477).

43. As per **claims 1, 21, 78, and 90**, Johnson discloses “A storage virtualization computer system (**system 200 of fig. 2**) comprising: a host entity for issuing IO requests (**System 204 of fig. 2**); an external storage virtualization controller (**RAID Controller 202**) coupled to said host entity for executing IO operations in response to said IO requests (**see fig. 2 and paragraph 0028**); and at least one physical storage device (PSD) (**Disc drive 1**), each coupled to the storage virtualization controller through a point-to-point serial-signal interconnect (**see fig. 2 and paragraph 0023**), for providing storage to the storage virtualization computer system through the storage virtualization controller (**see paragraph 0027**).

**See rejection above and bellow for all other claims**

44. **Claims 1, 21, 78, and 90**, are rejected under 35 U.S.C. 102(e) as being anticipated by Applicant Admitted Prior Art (AAPA).

45. As per **claims 1, 21, 78, and 90**, AAPA discloses “A storage virtualization computer system (**storage system of fig. 1**) comprising: a host entity for issuing IO requests (**see paragraph 0005**); an external storage virtualization controller (**see paragraph 0006 and fig. 1**) coupled to said host entity for executing IO operations in response to said IO requests (**see fig. 1**

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**and paragraph 0006); and at least one physical storage device (PSD) (see disc drive in paragraph 0008), each coupled to the storage virtualization controller through a point-to-point serial-signal interconnect (see fig. 1 and paragraph 0008), for providing storage to the storage virtualization computer system through the storage virtualization controller (see paragraph 0008).**

**See rejection above and bellow for all other claims**

**Claim Rejections - 35 USC § 103**

46. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

47. **Claims 17, 19, 38, 40, 47, 48, 84, and 85**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bicknell et al. (US pub. 2003/0193776) in view of Rabinovitz et al. (US pat. 6,483,107).

48. As per **claims 17, 19, 38, and 40**, Bicknell discloses “The storage virtualization subsystem of claim 23,” [See rejection to claim 23 above], including at least one said host-side IO device interconnect port is parallel/serial operating in target mode (see paragraph 0030), but fails to disclose expressly a SCSI.

Rabinovitz discloses a SCSI in a storage virtualization subsystem (col. 16, line 49).

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Bicknell et al. (US pub. 2003/0193776) and Rabinovitz et al. (US pat. 6,483,107) are analogous art because they are from the same field of endeavor of peripheral storage devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a canister and a casing of a computer peripheral enclosure as taught by Rabinovitz.

The motivation for doing so would have been because Rabinovitz teaches that a SCSI allow more connecting storage devices (see col. 16, lines 43-54).

Therefore, it would have been obvious to combine Rabinovitz et al. (US pat. 6,483,107) with Bicknell et al. (US pub. 2003/0193776) for the benefit of creating the storage virtualization subsystem to obtain the invention as specified in claims 17 and 38.

49. As per claims 47 and 84, Bicknell discloses “The storage virtualization subsystem of claim 42,” [See rejection to claim 42 above], including the enclosure management services mechanism (MUX 208 of fig. 8), but fails to disclose expressly wherein said enclosure management services mechanism is configured to support SES enclosure management services protocol.

Rabinovitz discloses a SES in a storage virtualization subsystem (col. 17, line 23).

Bicknell et al. (US pub. 2003/0193776) and Rabinovitz et al. (US pat. 6,483,107) are analogous art because they are from the same field of endeavor of peripheral storage devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its

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Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a canister and a casing of a computer peripheral enclosure as taught by Rabinovitz.

The motivation for doing so would have been because Rabinovitz teaches that a SES allow a user to monitor the enclosure from a remote location (**see col. 17, lines 29-31**).

Therefore, it would have been obvious to combine Rabinovitz et al. (US pat. 6,483,107) with Bicknell et al. (US pub. 2003/0193776) for the benefit of creating the storage virtualization subsystem to obtain the invention as specified in claims 47 and 84.

50. As per **claims 48 and 85**, the combination of Bicknell and Rabinovitz discloses "The storage virtualization subsystem of claim 42," [See rejection to claim 42 above] Bicknell discloses the enclosure management services mechanism, and Rabinovitz further discloses the SAF-TE, (**see col. 17, line 29**).

51. **Claims 18, 39, 49, 51, 52, and 53**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bicknell et al. (US pub. 2003/0193776) in view of Colton (US pub. 2005/0089027).

52. As per **claims 18 and 39**, Bicknell discloses "The computer system of claim 9," [See rejection to claim 9 above], including at least one said host-side IO device interconnect port (**see fig. 6**), but fails to disclose expressly wherein at least one said host-side IO device interconnect port is ethernet supporting the iSCSI protocol operating in target mode.

Colton discloses ethernet supporting the iSCSI protocol operating in target mode (**see fig. 11 and paragraph 1487, which discloses internet SCSI in an Ethernet network**).

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Bicknell et al. (US pub. 2003/0193776) and Colton (US pub. 2005/0089027) are analogous art because they are from the same field of endeavor of data transfer.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as described by Bicknell and a system and method for transferring data optically via an intelligent optical switching network as taught by Colton.

The motivation for doing so would have been because Colton teaches that **"The Sun server(s) running Oracle should have a minimum of 2 high-speed SCSI disk drives to ensure adequate performance"** (see paragraph 1487).

Therefore, it would have been obvious to combine Colton (US pub. 2005/0089027) with Bicknell et al. (US pub. 2003/0193776) for the benefit of creating the computer system to obtain the invention as specified in claims 18 and 39.

53. As per **claims 49, 51, and 53**, the combination of Bicknell and Colon discloses "The storage virtualization subsystem of claim 42," [See rejection to claim 42 above] Bicknell discloses the enclosure management services mechanism and a storage virtualization controller (see fig. 8), and Colon further discloses 12C latches, (see fig. 11).

54. As per **claim 52**, the combination of Bicknell and Colon discloses "The storage virtualization subsystem of claim 42," [See rejection to claim 42 above] Bicknell discloses the enclosure management services mechanism as a micro-computer (see fig. 8), and Colon further discloses a CPU for running a program, (see paragraph 0810 and fig. 11).

55. **Claims 89 and 95**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bicknell et al. (US pub. 2003/0193776) in view of Johnson et al. (US pub. 2003/0033477).

56. As per **claims 89 and 95**, Bicknell discloses “The method of claim 88,” [See rejection to **claim 88 above**], but fails to disclose expressly “wherein said data packet comprises a start segment at the beginning indicating the start of said data packet, an end segment at the end indicating the end of the data packet, a payload data segment containing actual IO information to transmit through the device-side IO device interconnect, and a check data segment containing check codes derived from said payload data for checking the correctness of said payload data after transmission”

Johnson discloses “wherein said data packet comprises a start segment at the beginning indicating the start of said data packet, an end segment at the end indicating the end of the data packet, a payload data segment containing actual IO information to transmit through the device-side IO device interconnect, and a check data segment containing check codes derived from said payload data for checking the correctness of said payload data after transmission” (see **paragraph 0025**).

Bicknell et al. (US pub. 2003/0193776) and Johnson et al. (US pub. 2003/0033477) are analogous art because they are from the same field of endeavor of peripheral storage devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify a disc storage subsystem that allows continued access to data stored in its Advanced Technology Architecture (ATA) disc drives in the event of a controller failure as



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described by Bicknell and a system generally relates to the field of information handling systems including computer systems and related devices using redundant array of independent disks (RAID) data storage systems and, more particularly, to a system and method for RAID striped data transfer as taught by Johnson.

The motivation for doing so would have been because Johnson teaches that ” **In general, each SGL entry contains an address and a length and may contain flags, such as Size of Address (i.e., 32-bit or 64-bit), End of List Reached, direction of data transfer, and the like**” (see paragraph 0024).

Therefore, it would have been obvious to combine Johnson et al. (US pub. 2003/0033477) with Bicknell et al. (US pub. 2003/0193776) for the benefit of creating the computer system to obtain the invention as specified in claims 89 and 95.

## **VII. RELEVANT ART CITED BY THE EXAMINER**

1. The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant’s art and those arts considered reasonably pertinent to applicant’s disclosure. See **MPEP 707.05(c)**.

2. The following reference teaches a storage virtualization computer system.

### **U.S. PATENT NUMBER**

US 2005/0223269

US 2005/0204078

US 2005/0160319

US 2005/0120170

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US 2004/0210584

US 2004/0143694

US 7,065,661

### **VIII. CLOSING COMMENTS**

#### **Conclusion**

##### **a. STATUS OF CLAIMS IN THE APPLICATION**

1. The following is a summary of the treatment and status of all claims in the application as recommended by M.P.E.P. 707.07(i):

##### **a(1) CLAIMS REJECTED IN THE APPLICATION**

2. Per the instant office action, claims 1-53, and 78-95 have received a first action on the merits and are subject of a first action non-final.

##### **b. DIRECTION OF FUTURE CORRESPONDENCES**

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is (571) 272-8596. The examiner can normally be reached on Monday to Friday 9:00 AM to 5:00 PM.

#### **IMPORTANT NOTE**

4. If attempts to reach the above noted Examiner by telephone is unsuccessful, the Examiner's supervisor, Mr. Fritz M. Fleming, can be reached at the following telephone number: Area Code (571) 272-4145. The fax phone number for the organization where this application or

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proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 13, 2006

Ernest Unelus  
Examiner  
Art Unit 2181  
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12/22/2006